

Remarks/Arguments

In the Non-Final Office Action dated March 24, 2010, it is noted that claims 1 and 10-14 are pending; that claim 1 stands rejected under 35 U.S.C. 112; and that all claims stand rejected under 35 U.S.C. §103.

By this response, claim 1 has been amended to clarify the assigning aspect of the defined subject matter. Support for the amendments to claim 1 can be found in the original specification at page 4, line 13 through page 5, line 18, for example. The amendment to claim 1 is believed to be proper and justified. No new matter has been added.

Rejection of Claims 1 under 35 U.S.C. § 112

Claim 1 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Office Action states that “it is unclear what the different spreading codes are assigned to.” *See Office Action at page 2.*

Claim 1 has been amended to call, in part, for “assigning, to the k^{th} connection, different spreading codes ($g_1^{(k)}$, $g_2^{(k)}$... $g_H^{(k)}$) from a defined set (G_i) of spreading codes, wherein the spreading codes are produced decentrally.” It is believed to be clear that the different spreading codes g_i are assigned to the k th connection. Claim 1 further defines that it is the assigned spreading codes that are placed in a sequential order by the “defining.”

For all the reasons stated above, it is submitted that claim 1 is clear, definite, and allowable under 35 U.S.C. §112. Withdrawal of this rejection is respectfully requested.

Cited Art

The art cited and applied in the present Office action includes: U.S. Patent Application Publication No. 2003/0081538 to Walton et al. (hereinafter “*Walton*”); U.S. Patent Application Publication No. 2002/0172260 to Rice (hereinafter “*Rice*”); U.S. Patent Application Publication No. 2002/0006156 to Belaiche (hereinafter “*Belaiche*”); U.S. Patent 5,541,954 to Emi (hereinafter “*Emi*”).

Rejection of Claims 1 and 10-14 under 35 U.S.C. § 103

Claims 1 and 10-13 stand rejected under 35 U.S.C. §103 as being unpatentable over Walton in view of Rice and Belaiche. Claim 14 stands rejected under 35 U.S.C. §103 as being

unpatentable over Walton in view of Rice, Belaiche, and Emi. The rejections are respectfully traversed.

Claim 1 is an independent method claim from which claims 10-14 depend directly. These dependent claims include all the limitations present in independent base claim 1.

The combination of Walton, Rice, and Belaiche do not teach, show, or suggest the limitations of the claimed invention. Walton is the only reference cited and applied in the present Office Action as allegedly teaching the limitation of “assigning, to the k^{th} connection, different spreading codes ($g_1^{(k)}$, $g_2^{(k)}$... $g_H^{(k)}$) from a defined set (G_i) of spreading codes,” as defined in claim 1. *See Office Action at page 3.* No other reference is cited or applied in this Office Action against the assigning limitation. Since no other reference is cited or applied against this limitation, it is understood that the USPTO agrees with Applicants’ conclusion in this regard.

Walton clearly and expressly teaches that only one spreading code is assigned and mixed with the data during the course of a connection. Any other interpretation of Walton overtly ignores the express teachings of Walton. For example, in cited paragraph [0010], Walton clearly shows that only one spreading code is applied to the data stream when he states that “the data spreading at a transmitter unit (e.g., a base station or a terminal) is performed in the frequency domain instead of the time domain. This may be achieved **by spreading each data stream (e.g., for a particular user) with a respective spreading code (selected from a set of available spreading codes)** prior to an inverse fast Fourier transform operation to derive OFDM symbols.” [Emphasis supplied]. Obviously, only one spreading code is assigned to a particular data stream. There is no teaching in Walton that “**different spreading codes**” are assigned to the particular data stream or connection – note Applicants’ use of the plural “codes” rather than the singular form “code.” Applicants consistently state the limitation of “different spreading codes” in the plural, not in the singular.

Since Walton teaches the mixing of one and only one spreading code with the data stream, it is then no wonder that Walton does not teach the limitations of “increasing the degree of encryption ... by allocating a sequence for the application of the different spreading codes” and “defining the sequence ... indicating an order in which each individual spreading code of the assigned different spreading codes is applied in said mixing.” *See USPTO admission of these missing limitations from Walton at page 4 of the present Office Action.* Walton has no

need for a sequence of different spreading codes as defined in the claims and, for that matter, a sequence of any kind because he only uses one spreading code for mixing with a particular data stream. Applicants are the only ones who require the use of a sequence for the codes because Applicants' system attains an increased degree of encryption by applying the "different spreading codes" to the k^{th} connection in a particular sequential order.

In another cited portion of Walton, it is also clear that one and only one spreading code is assigned to a particular data stream for mixing. At paragraph [0038], Walton states that:

"Each frequency-domain spreader 310 also receives a set of one or more spreading codes for the received data stream. For simplicity, the following description assumes one data stream for each user and one spreading code for each spreader **310**. The spreading code for user u is a sequence of M symbols and may be represented as:

$$c_u = \{c_u(0), c_u(1), \dots, c_u(M-1)\},$$

where each symbol $c_u(m)$ of the spreading code may be a real or a complex value. The spreading code length M represents the spreading ratio for the user data."

As shown in the related Figure 3 of Walton and as described in the reproduced passage above, Walton indicates that multiple codes are sent to the apparatus in Figure 3 but only one code is mixed with a particular user's data stream. The subscripts employed by Walton make this analysis very simple. Only one spreading code spreads a particular data stream from a user u . Each separate user data stream d_1 through d_u is spread by its own corresponding dedicated spreading code c_1 through c_u . As best understood from Walton's drawings and description, the set of one or more spreading codes delivered to the apparatus in Figure 3 is necessitated by and strictly related to the number of users whose data streams are received by that apparatus. There is no teaching or suggestion, express or implied, that Walton ever intends to assign a set of "different spreading codes" to a particular user's data stream (i.e., our claimed connection).

Applicants' stated position with regard to the teachings of Walton is further buttressed by Walton's own statements regarding the uplink modulator and demodulator in paragraphs [0073], [0075], and [0078]. These paragraphs are reproduced below with emphasis supplied:

[0073] Within modulator 280a, the user data stream is provided to a frequency-domain spreader **510**, which also receives a spreading code associated with the user. The uplink spreading code for user u comprises a sequence of M samples and may be represented as:

$$\underline{C}_u = \{C_u(0), C_u(1), \dots, C_u(M-1)\}.$$

[0075] In an embodiment, the spreading code used for the uplink for user u is unique to that user but is not necessarily orthogonal to the spreading

codes used by the other users. In particular, as long as the spreading codes are uncorrelated with each other, then processing gain may be obtained relative to the other users and high performance may be realized. Moreover, the uplink spreading codes may be different than the ones used for the downlink. In a specific embodiment, the spreading codes used for the uplink are also Walsh codes of length M.

[0078] Within spreader 510, **the user data is provided to a set of M (complex) multipliers 512a through 512m. Each multiplier 512 also receives a respective symbol $C_u(m)$ of the spreading code assigned to user u.** At each time interval k, each multiplier 512 multiplies the received data symbol, $D_u(k)$, with the spreading code symbol, $C_u(m)$, and provides a respective spread symbol to an IFFT 520. For each time interval k, IFFT 520 receives M spread symbols from all M multipliers 512, performs an inverse fast Fourier transform on the received symbols, and provides a sequence of N_{IFFT} transformed samples, $X_u(n,k)$, that collectively comprise an OFDM symbol for the data symbol, $D_u(k)$.

Thus, it is reasonable to conclude that Walton does not teach, show, or suggest “assigning, to the k^{th} connection, different spreading codes ($g_1^{(k)}, g_2^{(k)} \dots g_H^{(k)}$) from a defined set (G_i) of spreading codes,” as defined in the claims. No other cited and applied reference from the group of Belaiche, Emi, and Rice is believed to teach or suggest this limitation. Moreover, no proffer has been made by the USPTO with respect to teachings in these references that may have a bearing on the assigning limitation. Thus, it is also reasonable to conclude that, since Belaiche, Emi, and do not cure the defects in the teachings of Walton as discussed above, the combination of Walton, Rice, Belaiche, and Emi does not teach, show, or suggest “assigning, to the k^{th} connection, different spreading codes ($g_1^{(k)}, g_2^{(k)} \dots g_H^{(k)}$) from a defined set (G_i) of spreading codes,” as defined in the claims.

As noted above, Walton shows no need or desire for a sequence in the order of the different spreading codes since he employs only one spreading code in the spreading of a particular user's data stream. Thus, there is no motivation to combine Walton with Belaiche within the teachings of the references themselves. The combination of these references is improper since it is clearly based on motivation found outside the references themselves and perhaps from the Applicants' own teachings. In this regard, the USPTO has failed to establish a prima facie case of obviousness because the teachings of the references cited for combination are sufficiently inapposite that they, in fact, prohibit any such combination.

For at least all the reasons set forth above, it is believed that the elements of claim 1 and the claims dependent thereon are not taught, shown, or suggested by Walton, Rice, Belaiche,

and Emi, whether taken separately or in combination. It is therefore submitted that the elements of claim 1 and the claims dependent thereon would not have been obvious to a person of ordinary skill in the art upon a reading of Walton, Rice, Belaiche, and Emi, whether taken separately or in combination. Thus, it is submitted that claims 1 and 10-14 are allowable under 35 U.S.C. §103. Withdrawal of this rejection is respectfully requested.

Conclusion

In view of the foregoing, it is respectfully submitted that all the claims pending in this patent application are in condition for allowance. Entry of this amendment, reconsideration of the application, and allowance of all the claims are respectfully solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner contact the applicants' attorney, so that a mutually convenient date and time for a telephonic interview may be scheduled for resolving such issues as expeditiously as possible.

In the event there are any errors with respect to the fees for this response or any other papers related to this response, the Director is hereby given permission to charge any shortages and credit any overcharges of any fees required for this submission to Deposit Account No. 14-1270.

Respectfully submitted,

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